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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/614,316

07/07/2003

Prateek Arora

16INC0159

8275

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04/03/2007

EXAMINER

PATEL, SHEFALI D

ART UNIT

PAPER NUMBER

2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/03/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/614,316

Applicant(s)

ARORA ET AL.

Examiner

Shefali D. Patel

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2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 7/7/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### *Information Disclosure Statement*

2. The information disclosure statement (IDS) submitted on July 7, 2003 has been considered by the examiner.

### *Specification*

3. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code (on page 2 lines 8-9 and on page 7 lines 16-17). Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.
4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

### *Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3-5 and 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wyman et al. (US 7,106,891) (hereinafter, "Wyman") in view of Ayala et al. ("Spatial Size Distributions: Applications to Shape and Texture Analysis," IEEE, December 2001, pp. 1430-1442) (hereinafter, "Ayala").

With regard to claim 1 Wyman discloses an image processing method (Figure 4) comprising the steps of: extracting a plurality of candidate images similar to a reference image from among a plurality of

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images (col. 8 lines 62-63 receiving images from MRI 105 and CT 110, col. 7 lines 44-60); transforming the plurality of candidate images on the basis of the reference image (step 425 of transformation, col. 9 lines 31-42); calculating mutual information shared by each of the transformed candidate images and the reference image (steps 430 and 440, col. 10 lines 5-47); and selecting a candidate image, which shares the largest amount of mutual information with the reference image, from among the plurality of candidate images (the image that matches the most data is selected at step 450, col. 10 lines 8-13). Wyman does not expressly disclose utilizing granulometry. Ayala discloses this on page 1430 2<sup>nd</sup> column lines 6-11 and under section 3 starting on page 1431. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Ayala with Wyman. The motivation for doing so is to classify the image data (so that when MRI image (reference image) in Wyman is used to compare with the CT images (candidate images), the candidate images are classified by its patterns to find the closest match to the reference image) and to make a distinction by pattern analysis of the mathematical morphology as suggested by Ayala. Therefore, it would have been obvious to combine Ayala with Wyman to obtain the invention as specified in claim 1.

With regard to **claim 3** Wyman discloses transformation includes alignment of barycenters (Figure 5 and col. 10 line 48 to col. 11 lines 1-3).

With regard to **claim 4** Wyman discloses reference image and the candidate images are medical images (col. 7 lines 50-59).

**Claim 5** recites identical features as claim 1 except claim 5 is an apparatus claim. Thus, arguments similar to that presented above for claim 1 is equally applicable to claim 5. Applicants' attention is invited to Figures 1, 3 and 6 where an apparatus for the method is illustrated.

**Claim 7** recites identical features as claim 3 except claim 7 is an apparatus claim. Thus, arguments similar to that presented above for claim 3 is equally applicable to claim 7.

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**Claim 8** recites identical features as claim 4 except claim 8 is an apparatus claim. Thus, arguments similar to that presented above for claim 4 is equally applicable to claim 8.

7. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wyman et al. (US 7,106,891) (hereinafter, "Wyman") in view of Ayala et al. ("Spatial Size Distributions: Applications to Shape and Texture Analysis," IEEE, December 2001, pp. 1430-1442) (hereinafter, "Ayala") as applied to claims 1, 3-5 and 7-8 above, and further in view of Nakajima et al. (US 5,623,560) (hereinafter, "Nakajima").

With regard to **claim 2** Wyman (modified by Ayala) discloses an image processing method as disclosed above in claim 1 and the arguments are not repeated herein, but are incorporated by reference. Neither Wyman nor Ayala expressly disclose having transformation include matching of magnification. Nakajima discloses this at col. 14 line 41 to col. 15 lines 1-6. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Nakajima with Ayala and Wyman. The motivation for doing so is to have the reference and the candidate image be aligned for matching (please notice that Wyman does this correction by magnification also, however, by zooming out at col. 8 lines 9 and 25) as suggested by Nakajima. Therefore, it would have been obvious to combine Nakajima with Ayala and Wyman to obtain the invention as specified in claim 2.

**Claim 6** recites identical features as claim 2 except claim 6 is an apparatus claim. Thus, arguments similar to that presented above for claim 2 is equally applicable to claim 6.

### *Conclusion*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 7,142,700 – Geometry matching for imaging medical apparatus

US 6,560,354 – Apparatus and method for registration of images to physical space using a weighted combination of points and surfaces

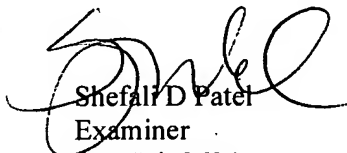
JP 06-165036 – Position matching method for radiograph

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shefali D. Patel whose telephone number is 571-272-7396. The examiner can normally be reached on M-F 8:00am - 5:00pm (First Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella can be reached on (571) 272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Shefali D Patel  
Examiner  
Art Unit 2624

sdp